

Microprocessor Software

- Watch this Code.org video about microprocessors:
 - <https://www.youtube.com/watch?v=xnyFYiK2rSY&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjlqWbN-&index=6>
- Microprocessors only understand very simple instructions
 - “add binary bits (1’s and 0’s)”
 - “shift bits to the right one place”
 - “save these bits to this register”
- Microprocessors understand very few instructions
 - usually a couple of hundred instructions
- Microprocessors only understand instructions given in a very precise format
 - “syntax” is the structure the instruction must follow

Microprocessor Software

- Engineers seldom use this “machine” language directly
 - only for very specialized functions
- Engineers usually use “higher level” languages
 - Java, C++, BASIC, are examples
 - programs must be compiled into “machine” language before they are run on the microprocessor
 - EV3-G is a very high level languages
- Let’s try “machine” code for a special processor:
 - The **Peanut Butter & Jelly Sandwich Processor**
 - A.K.A. – *Your Squad Leader!!*
 - Challenge:
Write “machine” code to make a PB&J Sandwich

Microprocessor Software Lab

Peanut Butter & Jam Sandwich Processor

Instruction Format (syntax):

Register _ Command _ Resource

Registers:

Left Hand (LH)

Right Hand (RH)

Commands:

Move to (MT)

Grab (GR)

Drop (DR)

Rotate (RT)

Resources:

Peanut Butter:

- Jar (PBJ)
- Lid (PBL)
- Contents (PBC)

Jam:

- Jar (JJ)
- Lid (JL)
- Contents (JC)

Bread:

- Bag (BB)
- Seal (BS)
- Contents (BC)

Knife (KN)

Spoon (SP)

Plate (PL)

Desk (DS)

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Peanut Butter & Jam Sandwich Processor Instructions

Instruction Format (syntax):

Register_Command_Resource

Sample Instructions:

Left Hand_Move to_Peanut Butter Jar
(LH_MT_PBJ)

Right Hand_Rotate_Spoon
(RH_RT_SP)